

SAVING THE MOBULA RAYS

Working together to reduce Mobula bycatch in tuna fisheries

Mobula rays are also called "manta rays," "Mobulid rays," and "devil rays." This project focuses on the seven species of Mobula rays listed below.

Giant Oceanic Manta Ray *Mobula birostris*

- Front-facing mouth
- Mostly black back with white shoulder markings forming two mirrored triangles, creating a black 'T'
- Mostly white stomach with dark shading on back of the wings and gills
- Broad head with long cephalic lobes (protruding "horns")
- Small bump at the base of the tail

Reef Manta Ray *Mobula alfredi*

- Front-facing mouth
- Mostly black back with white or gray shoulder markings that form a dark 'Y' behind the head
- Mostly white stomach often with dark spot on the abdomen between the gills, and toward the back of the wings
- Large cephalic lobes typically meet together at the center of the mouth
- Small depression or occasionally a small bulgem at the base of spine

Spinetail Devil Ray *Mobula mobular*

- Downward-facing mouth
- Dark blue to black back
- White patches on the tips of the cephalic lobes and just behind the eyes
- Extremely long tail with small spine at the base
- Small white patch on the back fin

Sicklefin Devil Ray *Mobula tarapacana*

- Downward-facing mouth
- Olive green/brown back
- Mostly white stomach with gray zigzagged shading toward back of the wings and around gills and mouth
- Pronounced ridge running vertically down the center of the back
- Wings curved backward away from the head

Bentfin Devil Ray *Mobula thurstoni*

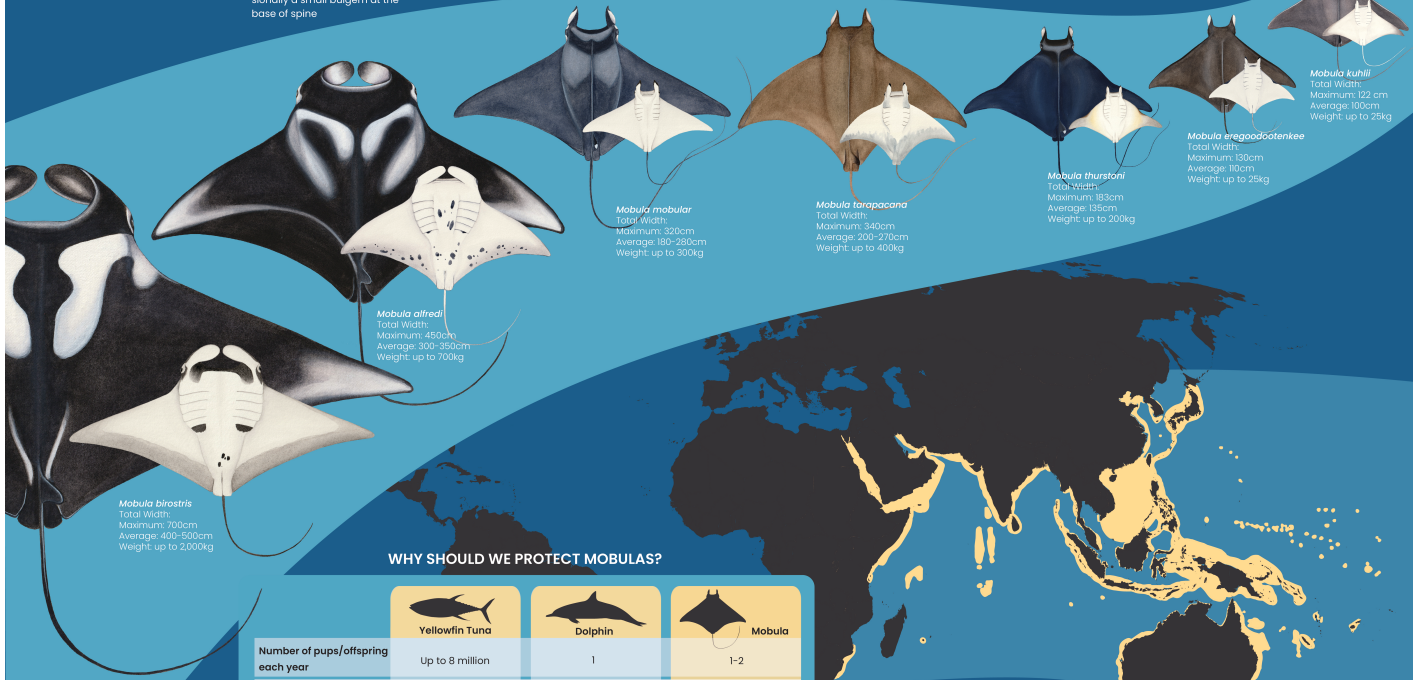
- Downward-facing mouth
- Dark blue to gray back
- Stomach mostly white with dark shading on the front edges of wingtips and brown sheen on the wings
- Distinct double-curvature shape on front edges of wings
- Relatively short cephalic lobes and neck

Longhorned Pygmy Devil Ray *Mobula eregodootenkee*

- Downward-facing mouth
- Brown back that turns black or gray after death
- Relatively long cephalic lobes and neck
- White markings on the cephalic lobes extend just above the eyes
- Wings angled away from the head

Shorthorned Pygmy Devil Ray *Mobula kuhlii*

- Downward-facing mouth
- Dark gray to brown back that turns light gray after death
- Dark "collar" in half-moon shape behind head
- Relatively short cephalic lobes
- Pale gray stripe runs along the front edges of the wingtips
- Often has white-tipped back fins



Mobula birostris
Total Width: 700cm
Average: 400-500cm
Weight: up to 2,000kg

Mobula alfredi
Total Width: Maximum: 450cm
Average: 300-350cm
Weight: up to 700kg

Mobula mobular
Total Width: Maximum: 320cm
Average: 190-260cm
Weight: up to 300kg

Mobula tarapacana
Total Width: Maximum: 340cm
Average: 200-270cm
Weight: up to 400kg

Mobula thurstoni
Total Width: Maximum: 183cm
Average: 161cm
Weight: up to 200kg

Mobula eregodootenkee
Total Width: Maximum: 130cm
Average: 100cm
Weight: up to 25kg

Mobula kuhlii
Total Width: Maximum: 122 cm
Average: 100cm
Weight: up to 25kg

WHY SHOULD WE PROTECT MOBULAS?

	Yellowfin Tuna	Dolphin	Mobula
Number of pups/offspring each year	Up to 8 million	1	1-2
Duration of incubation/pregnancy	1-3 days	12 months	12 months
Maturity age	2-3 years	8 years	3 years
Life expectancy	Up to 7 years	Up to 40 years	Up to 40 years

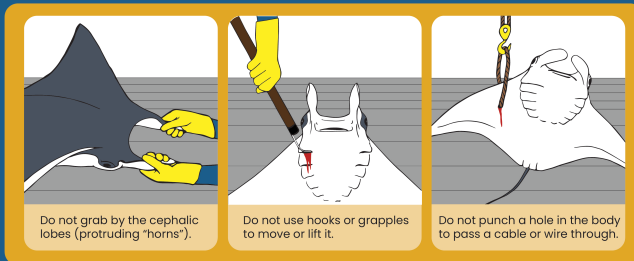
WHERE ARE THEY?

● Area of Occupancy ● Extent of Occurrence

Map adapted from Lawson et al. (2016), PeerJ

BEST PRACTICES TO SAFELY RELEASE MOBULA RAYS

NOT ACCEPTABLE ❌



Do not grab by the cephalic lobes (protruding "horns").

Do not use hooks or grapples to move or lift it.

Do not punch a hole in the body to pass a cable or wire through.

ACCEPTABLE ✅



Release it as quickly as possible.

Use a stretcher or cargo net to remove it from the deck.

Use a brailer net to remove large individuals.

WHAT DO WE NEED TO KNOW TO REDUCE THE IMPACT OF THE FISHERY?

In the Eastern Pacific Ocean, about one in every six purse seine sets contain a Mobula ray, and many of these animals die. But with good practices, we can considerably reduce the chances of incidental mortality for Mobula rays.

To find solutions, researchers are conducting two studies:

- 1) An investigation of the genetic structure of Mobula populations, and
- 2) An investigation of the likelihood of mortality after a Mobula ray is released.

These two studies will reveal crucial information to guide conservation efforts and protect these iconic species. This work is led by researchers at UC Santa Cruz, Mobula Conservation Project, The Manta Trust, Monterey Bay Aquarium, and CIAT, and is supported by the International Seafood Sustainability Foundation, the Save Our Seas Foundation, and TUNA CONS.

WE APPRECIATE YOUR IDEAS TO IMPROVE THE RELEASE AND PROTECTION OF MOBULAS
TOGETHER WE CAN SAVE THE MOBULA RAYS!



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